

## Unique Chemistry Solutions to Regional, State, and Tribal Issues

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Many of ORD's research projects relate to broad scientific themes, such as biological and chemical indicators or computational toxicology. Others are discrete studies resulting from requests from or informal contacts with clients and collaborators. This poster presents a montage of five recent "grass roots" research efforts that the Environmental Chemistry Branch (ECB) at NERL-Las Vegas has conducted in response to real-world analytical chemistry problems of the Regions, the States, and Tribal Authorities.

EPA Regions 2, 4, and 9 have requested help in identifying unknown compounds found in samples collected around Superfund sites. A unique software package (ion composition elucidation - ICE) developed by ECB scientists for high resolution mass spectrometry was used to determine the compositions of unknown and potentially toxic pollutants that were unresolved via conventional methodology.

Region 2 needed to determine vinyl chloride (a known human carcinogen) in milk; instrumentation (vacuum distillation) developed in ECB for the multi-media determination of volatile organics was used to address this need. This led to a survey of MTBE and other volatile organics in milk from Nevada, Utah, Arizona, and California.

One scientist is closely working with Tribal authorities and the State of Alaska to study the occurrence of mercury in indigenous food sources, using a recently developed method to determine mercury directly in solid matrices.

ECB's scientists provided support, using state-of-the-art technologies (electrospray-ion trap mass spectrometry), to solve the source and fate of an industrial spill of organotins for the state of South Carolina.

Region 9, the National Park Service, and others want to better understand regional air transport of pesticides, which could be implicated in the disappearance of the yellow-legged frog from the alpine lakes of the Sierra Nevada. Our chemists are working with other scientists within ORD and outside EPA to provide answers.

ECB's expertise in analytical chemical methods has been applied in many research projects initiated by Regions, Program Offices, States and Tribal authorities.

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